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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,151	11/20/2003	I-Jong Lin	200312186-1	8992
22879 7590 04/18/2008 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400				
EXAMINER LIEW, ALEX KOK SOON				
ART UNIT 2624		PAPER NUMBER		
NOTIFICATION DATE 04/18/2008		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/718,151

Applicant(s)

LIN, I-JONG

Examiner

ALEX LIEW

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

The amendment filed on 2/11/08 is entered and made of record.

Response to Applicant's Arguments

1. On page 13, the applicant stated:

Bilbrey specifically discloses at column 37, lines 12-25, that images 3381 and 3383 correspond to the output signals from the first key generator 3380 and the second key generator 3382, respectively. Images 3381 and 3383 are shown in Figure 53. However, these images are not displayed on a display to be captured by any of cameras 3310 and 3312. Images 3381 and 3383 are used only for aiding the reader to understand how the system shown in Figure 53 operates and their corresponding signals are used by the system. In other words, only image 3335 is shown on a display, but not images 3381 and 3383. Furthermore, neither image 3335 nor images 3381 and 3383 are displayed such that features of those images are captured by cameras 3310 or 3312.

The examiner agrees with the applicant. However, in an updated search, the examiner found Tomasi (US pat no 7,212,663) and Prakash (US pub no 2002/0131495).

Tomasi discloses generating an image on said display (see figure 1, element 110, is the projector used to generate image patterns); and capturing first contents from said image displayed on said display with an image capture device, said image capture device being spaced from said display (see figure 6, 640). Tomasi does not disclose analyzing said first content to identify a fest set of potentially occluded pixels. Prakash discloses

analyzing said first contents to identify a first set of potentially occluded pixels (see figure 4B, area 408 is the occluded pixels); changing a value of said first set of potentially occluded pixels to generate a modified image on said display (see figure 4E, the pixels that are labeled '1' are the changed pixels); generating said confirmed occluded pixels on said display using a predetermined display value (see figure 4L, area 410 are the final resulting pixels) and Prakash reads on capturing second contents from said modified image displayed on said display with said image capture device (see figures 4A and 4B, the image in figure 4B is the second modified image, it is modified because it is different from the first image, figure 4A).

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 - 4, 6 - 9, 11 - 15, 17 - 21 and 23 - 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomasi (US pat no 7,212,663) in view of Prakash (US pub no 2002/0131495) and Chen (US pat no 6,556,704).

With regards to claim 1, Tomasi discloses generating an image on said display (see figure 1, element 110, is the projector used to generate image patterns); and capturing

first contents from said image displayed on said display with an image capture device, said image capture device being spaced from said display (see figure 6, 640). Tomasi does not disclose analyzing said first content to identify a first set of potentially occluded pixels. Prakash discloses analyzing said first contents to identify a first set of potentially occluded pixels (see figure 4B, area 408 is the occluded pixels); changing a value of said first set of potentially occluded pixels to generate a modified image on said display (see figure 4E, the pixels that are labeled '1' are the changed pixels); generating said confirmed occluded pixels on said display using a predetermined display value (see figure 4L, area 410 are the final resulting pixels) and Prakash reads on capturing second contents from said modified image displayed on said display with said image capture device (see figures 4A and 4B, the image in figure 4B is the second modified image, it is modified because it is different from the first image, figure 4A). One skilled in the art would include step of finding the occluded area and modifying the occluded area because to tracking an object may lead to blurring the image, predicting future values of pixels will improve quality of image. Prakash does not disclose selectively conforming said first set potentially occluded pixels as confirmed occluded pixels based on said second contents and capturing contents for the second time. Chen discloses selectively confirming said first set potentially occluded pixels as confirmed occluded pixels based on said second contents (see figure 1, the top image is the first image content and the bottom image is the second image content; the person in the image is read as the occluded pixels, both images are needed to calculate the depth image, 10, the depth pixels are calculated, this is discussed on column 6, lines 53 to 67 and column 7, line 1,

the object in the bottom image confirms the occluded pixels of the top image) and generating said confirmed occluded pixels on said display using a predetermined display value (the generated image is shown in figure 1, element 10).

One skilled in the art would include selectively confirming said first set potentially occluded pixels and generating said confirming occluded pixels of second image content because to create a three dimensional image of the object image, where more details are shown improving details of the image.

With regards to claims 2 and 3, Prakash discloses comparing a value of each pixel of said first contents to a corresponding value of each pixel of said image (see figure 4B, the darker portion are the occluded pixels), wherein said display values represent an intensity (the occluded pixel has higher darker intensity).

With regards to claim 4, Prakash discloses changing said value of said set of potentially occluded pixels to a reserved value (see figure 4E, '1' is the reserve value); and regenerating said display using reserved value for said first set of potentially occluded pixels and image values for remaining pixels (see figure 4C, the white pixels are blank and figure 4E, '1' is the regenerated value).

With regards to claim 6, Tomasi, Prakash and Chen disclose all the limitations discussed in claim 5, but do not disclose having the user select a predetermined distance. However, it is well known in the art to have the user / operator select

parameter any type of image analysis (MPEP 2144.03). Chen suggests having the user inserting information into computer software (see column 5 line 67 and column 6, lines 1 to 2). One skilled in the art would include having a user select certain parameters for an image analysis function because the user might be an expert and can custom modified an image to filter out any defects or artifacts in an image.

With regards to claims 7, 9, 13, 15, 19, 21 and 25, see the rationale and rejection for claim 1.

With regards to claims 8, 14 and 20, see the rationale and rejection for claim 2.

With regards to claim 11, Prakash discloses actively testing all of the pixels of said displayed image, prior to said step of passively testing, to initialize an estimate of said display image (system of Prakash must inherently examine all areas in the first frame to determine the occluded area).

With regards to claim 12, Prakash reads on changing a threshold associated with said step of passively testing said version of displayed image (see figure 5, element 508), based upon a result of said step of actively said portion of said displayed image (see figure 5, element 504, the pixel on the outer rim is read as the occluded pixel).

With regards to claims 17 and 23, see the rationale and rejection for claim 11.

With regards to claims 18 and 24, see the rationale and rejection for claim 12.

3. Claims 10, 16 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomasi '663 in view of Prakash '495 and Chen '704 as applied to claim 9 further in view of Overton (US pub no 2003/0012409).

With regards to claim 10, Tomasi, Prakash and Chen disclose all the limitations of claim 9, but do not disclose testing another portion of said display image proximate said confirmed portion of said display image for occlusion. Overton discloses testing another portion of said display image proximate said confirmed portion of said display image for occlusion (see figure 14, there "final" number of area to be examined for occlusions). One skilled in the art would include testing another portion of the target image because to include all occlusion areas which allows modification of pixel values to increase recognition of the object in the image.

With regards to claim 16 and 22, see the rationale and rejection for claim 10.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomasi '663 in view of Prakash '495 and Chen '704 as applied to claim 1 further in view of Bilbrey (US pat no 6,020,931).

With regards to claim 5, Tomasi, Prakash and Chen disclose all the limitations discussed in claim 1; Chen reads on identifying display pixels within a predetermined distance of said confirmed occluded pixel as a second set of potentially occluded pixels (see figure 1, the object image pixels in bottom image is identified / read as occluded pixels); and changing a value of said second set of potentially occluded pixels on said display to a reserved value (see figure 1, element 10 the pixels in the bottom image is changed to the pixel values in the depth image with the help of the pixel values in the top image). Chen does not disclose capturing third contents of said display using said image capture device.

Bilbrey made a suggestion where his invention is not only limited to using only two cameras, but there can be more than two cameras, shown in figure 54; the image of the person is taken at plurality of perspective. Bilbrey discloses capturing third contents of said display using said image capture device (see figure 54) and the combination of Bilbrey's third camera shown in figure 54 and Chen's method of confirming potentially occluded pixel (see figure 1): disclose selectively confirming said second set of potentially occluded pixels as confirmed occluded pixels based on said third contents. One skilled in the art would include a third image content because to have one more perspective view of the object image, to create another three dimensional image to increase recognition of the object in the image.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX LIEW whose telephone number is (571)272-8623. The examiner can normally be reached on 9:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/
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4/14/08